What is claimed is

1. A method for down regulating a pre-selected endogenous gene in a mammal, comprising administering to a tissue of said mammal a composition comprising a double-stranded RNA molecule wherein said RNA molecule specifically reduces or inhibits expression of said endogenous gene.

2. The method according to claim 1, wherein said RNA molecule is a small interfering RNA or a long double stranded RNA.

3. The method according to claim 2, wherein said RNA molecule is a small interfering RNA molecule having a length of about 21-23 bp.

4. The method according to claim 2, wherein said RNA molecule is a long double stranded RNA having a length of about 100 – 800 bp.

5. The method according to any preceding claim wherein said composition is administered directly to a tissue of said mammal.

6. The method according to claim 5, wherein administration is via injection into a tumor in said mammal or into a joint in said mammal.

7. The method according to any preceding claim wherein said composition further comprises a polymeric carrier that enhances delivery of said RNA molecule to said tissue of said mammal.

8. The method according to claim 7 wherein said polymeric carrier comprises a cationic polymer that binds to said RNA molecule.

9. The method according to claim 8 wherein said cationic polymer is an amino acid copolymer.

10. The method according to claim 9 wherein said polymer comprises histidine and lysine residues.

11. The method according to claim 10 wherein said polymer is a branched polymer.

12. The method according to any of claims 1-5 wherein said composition comprises a targeted synthetic vector that enhances delivery of said RNA molecule to said tissue of said mammal.

13. The method according to claim 12, wherein said vector comprises a cationic polymer, a hydrophilic polymer, and a targeting ligand.

14. The method according to claim 12, wherein said cationic polymer is a polyethyleneimine.

15. The method according to claim 12, wherein said hydrophilic polymer is a polyethyleneglycol.

16. The method according to claim 15, wherein said targeting ligand is a peptide comprising an RGD sequence.

17. The method according to any preceding claim wherein a pulsed electric field is applied to said tissue substantially contemporaneously with said composition.

18. The method according to any preceding claim wherein said endogenous gene is a mutated endogenous gene.

19. The method according to claim 18 wherein at least one mutation in said mutated gene is in a coding or regulatory region of said gene.

20. The method according to claim 17, further comprising substantially contemporaneously applying a second electric pulse to said tissue.

21. A method for down regulating a pre-selected endogenous gene in a mammal, comprising administering to a tissue of said mammal a vector composition wherein said vector encodes an RNA transcript operatively coupled to a regulatory sequence that controls transcription of said transcript,

and wherein said transcript can form a double stranded RNA molecule in said tissue that specifically reduces or inhibits expression of said endogenous gene.

22. The method according to claim 21, wherein said vector is a viral vector or a plasmid, cosmid or bacteriophage vector.

23. The method according to any preceding claim, wherein said endogenous gene is selected from the group consisting of cancer causing genes, growth factor genes, angiogenesis factor genes, protease genes, protein serine/threonine kinase genes, protein tyrosine kinase genes, protein serine/threonine phosphatase genes, protein tyrosine phosphatase genes, receptor genes, matrix protein genes, cytokine genes, growth hormone genes, and transcription factor genes.

24. The method according to claim 21, wherein said regulatory sequence comprises a promoter.

25. The method according to claim 24 wherein said promoter is a tissue-selective promoter.

26. The method according to claim 25 wherein said tissue-selective promoter is a skin-selective promoter or a tumor selective promoter.

27. The method according to claim 24, wherein said promoter is selected from the group consisting of CMV, RSV LTR, MPSV LTR, SV40, AFP, ALA, OC and keratin specific promoters.

28. The method according to claim 17, wherein said electric pulse comprises a square wave pulse of at least 50 V that is applied to said tissue for between about 10 and about 20 minutes.

29. The method according to claim 28, wherein said electric pulse is monopolar, bipolar or of multiple polarity.

30. The method according to claim 17 wherein said electric pulse comprises an exponential decay pulse of 120 V that is applied to said tissue for between about 10 and about 20 minutes.

31. The method according to claim 17, wherein said electric pulse is applied via an electrode selected from the group consisting of a caliper electrode, a meander electrode, a needle electrode, a micro needle array electrode, a micropatch electrode, a ring electrode, and combinations thereof.

32. The method according to claim 31 wherein said electrode is a caliper electrode having an area of about 1 cm^2.

33. The method of claim 32 wherein the caliper electrode is applied to a skin fold having a thickness of about 1 mm to about 6 mm.

34. A method for treating a disease in a mammal associated with undesirable expression of a preselected endogenous gene, comprising applying a nucleic acid composition to a tissue of said mammal and substantially contemporaneously applying a pulsed electric field to said tissue, wherein said nucleic acid composition is capable of reducing expression of the endogenous gene in said tissue.

35 The method according to claim 34, wherein said disease is cancer or a precancerous growth.

36. The method according to claim 34, wherein said tissue is a breast tissue, colon tissue, a prostate tissue, a lung tissue or an ovarian tissue.

37. The method according to claim 34, wherein said nucleic acid composition comprises a small interfering RNA, a long double stranded RNA, or a polynucleotide molecule that encodes an RNA transcript that can form a substantially double stranded RNA molecule.

38 The method according to claim 37, wherein said RNA molecule is a small interfering RNA molecule having a length of about 21-23 bp.

39. The method according to claim 37, wherein said RNA molecule is a long double stranded RNA having a length of about 100 – 800 bp.

40. The method according to claim 39, wherein said RNA has a length of about one hundred base pairs or less.

41. The method according to claim 34, wherein said nucleic acid composition is a vector capable of encoding an siRNA or an RNAi, and wherein said vector is a plasmid, cosmid, bacteriophage, or viral vector.

42. The method according to claim 41, wherein said vector is a retroviral or adenoviral vector.

43. The method according to any preceding claim, wherein said mammal is a human.

44. The method according to claim 34, wherein said preselected endogenous gene is selected from the group consisting of cancer causing genes, growth factor genes, angiogenesis factor genes, protease genes, protein serine/threonine kinase genes, protein tyrosine kinase genes, protein serine/threonine phosphatase genes, protein tyrosine phosphatase genes, receptor genes, matrix protein genes, cytokine genes, growth hormone genes, and transcription factor genes.

45. The method according to claim 34, wherein said gene is selected from the group consisting of VEGF, VEGF-R, VEGF-R2, VEGF121, VEGF165, VEGF189, and VEGF206.